

January 4, 2000

SUMMARY

This report summarizes a botanical resource assessment of the Sites, Colusa cell, Newville, and Red Bank reservoir sites in 1998 and 1999. The assessment included rare plant field surveys, mapping and analysis of vegetation communities, and an inventory of vascular plants in the reservoir inundation zone.

There were no State or federally threatened or endangered plants found in the reservoir areas during the course of the study. Populations of federal Species of Concern were identified in the Newville and Red Bank alternatives. Several rare and limited distribution species were also found in all of the alternatives. The Newville and Red Bank sites yielded the greatest number of populations of sensitive plant species.

Vegetation communities which may be affected by the proposed reservoirs include California annual grassland, valley and blue oak woodland, willow riparian scrub, cottonwood riparian woodland, foothill pine woodland, chaparral, vegetated wetlands, and vernal pools. More than 80 percent of the Sites, Colusa cell, and Newville reservoir areas support annual grassland, in contrast with Red Bank which is more than 80 percent oak and foothill pine woodland. Among the reservoir alternatives, the maximum oak woodland loss may be 1,800 acres. Vernal pool impacts vary between the sites from 0 to 23 acres.

A vascular plant inventory was prepared for each site, showing that species diversity is highest at the Newville site and lowest in the Colusa cell. Non-native species representation was also greatest at Newville. The annual grassland is dominated by non-native species such as yellow star thistle (*Centaurea solstitialis*), brome grasses (*Bromus* sp.), and medusa head (*Taeniatherum caput-medusae*). Non-native species density or cover was not quantified.

January 4, 2000

INTRODUCTION

This report is a summary of a two year botanical resource assessment for four proposed Offstream Storage Reservoir alternatives: Sites, Colusa cell, Newville, and Red Bank. Colusa cell is defined for this study as the northern half of the Colusa Reservoir. Studies included a comprehensive literature background search, rare plant surveys and inventory of the inundation zones, and analysis of the vegetative communities in the proposed project areas. These studies were conducted in compliance with statutes and guidelines set forth in the California Environmental Quality Act, the California Endangered Species Act, and the Federal Endangered Species Act to determine the extent to which sensitive botanical resources would be affected by the proposed project.

1 METHODOLOGY

1.1. General Vegetation

The California Native Plant Society and the California Department of Fish and Game have classified natural plant communities in California for broad scale resource inventory and assessment. This classification system provides parameter definition for general vegetation types and of rare communities, as set forth in the CNPS Manual of California Vegetation (Sawyer and Keeler-Wolf 1995). The manual's classifications were used to define the natural communities which may be affected by the Offstream Storage Reservoirs. Plant communities were delineated on aerial photos (1:6,000; 1:12,000). The photos were field verified and digitized, with computer mapping software, to obtain acreage estimates of the existing vegetation communities. These data were used to prepare a plant community profile illustrating the percent cover of

January 4, 2000

dominant vegetation types within each reservoir.

1.2. Sensitive Plants

The CNPS, CDFG, and U.S. Fish and Wildlife Service have all developed standard classification systems for sensitive plants. To simplify these standards for the purpose of this report, sensitive plant species are defined by DWR as high priority, priority, and low priority. High priority species are either State or federally threatened, endangered, proposed threatened, or candidate species (State). Priority species are either federal Species of Concern, or CNPS List 1A, 1B, 2, or 3 species. The CNPS categories include species that are either believed to be extinct, may become listed, or are rare throughout their California range. Low priority species are defined as plants of limited distribution: CNPS List 4 (CDFG 1997, 1998, 1999; Harlow 1998; Skinner and Pavlik 1994; White 1997; USFWS 1996, 1997).

High priority plant species either are, or will soon be designated “threatened” or “endangered” under the CESA of 1985, or “rare” or “endangered” under the National Plant Protection Act of 1977 (CDFG code 1904, 2074.2, 2075.5). High priority species may also be protected under Section 7(c) of the FESA of 1973 (50 CFR). Since 1985, “threatened” plants are protected pursuant to CESA; “endangered” plants may be protected by CESA and NPPA. However, consideration of plants listed as “rare” are directed primarily by NPPA (CDFG code 1900, 1913(c).) and by guidelines set forth in the CEQA (1970, Cal. Pub. Res. Code 21000(a), 21151(a).) (Skinner and Pavlik 1994). Protection under State and federal law requires that a full environmental impact assessment will identify means to avoid impacts to the greatest extent possible and, where a significant impact would occur, acceptable measures will be identified to minimize or mitigate the impacts to below the level of significance.

January 4, 2000

References and regional specialists were consulted to identify documented occurrences of prioritized species and rare communities within the project area and adjacent USGS 7.5 minute quadrangles (Abrams 1923,1944,1951; Abrams and Ferris 1960; Griggs 1997; Isle 1998, 1999; Hickman 1993; Horenstein 1998, 1999; Lis 1998, 1999; Munz and Keck 1973; USDA Forest Service 1994):

CDFG, California Natural Diversity Data Base, 1998, 1999

A Manual of California Vegetation

CDFG List of Endangered and Threatened Species, April 1999

CNPS Electronic Inventory, 1999

United States Fish and Wildlife Service list of federally endangered,
threatened, proposed and candidate species, December 1998

CDFG Region I, Redding, California

CDFG, Region 2, Sacramento, California

1.2.1. High Priority Species Background

Ten high priority plant species were identified from the literature search as previously documented within 30 miles of the proposed reservoirs (Table I.2.1). The probability for finding these species in the project was predicted by using known habitat parameters and proximity of the nearest occurrence (Table 1.2.2.).

January 4, 2000

Table 1.2.1. High Priority Plant Species with Potential to Occur in the Vicinity of the Offstream Storage Reservoir Projects, Tehama, Glenn, and Colusa Counties, California.

Species Common Name ¹	State Status ²	USFWS listing ³	CNPS status ⁴	Distribution by County	Habitat Type (typical elevation)
<i>Brodiaea coronaria</i> ssp. <i>rosea</i> Indian Valley broadiaaea	CE	SC	List 1B	COL GLE LAK TEH	chaparral, cismontane woodland, valley & foothill grassland/ serpentinite (0-100 m)
<i>Chamaesyce hooveri</i> Hoover's spurge	none	FT	List 1B	BUT GLE MER STA TEH TUL	vernal pools (25-250 m)
<i>Cordylanthus palmatus</i> palmate-bracted bird's-beak	CE	FE	List 1B	ALA COL FRE GLE MAD SJQ YOL	chenopod scrub, valley & foothill grassland/alkaline (5-155 m)
<i>Gratiola heterosepala</i> Bogg's Lake hedge-hyssop	CE	none	List 1B	FRE LAK LAS MAD MOD PLA SAC SHA SJQ SOL TEH OR	marshes, swamps (lake margins), vernal pools (0-1,200 m)
<i>Lupinus milo-bakeri</i> Milo Baker's lupine	CT	SC	List 1B	COL MEN	cismontane woodland, valley & foothill grassland (395-430 m)
<i>Neostaphia Colusana</i> Colusa grass	CE	FT	List 1B	COL GLE MER SOL STA YOL	vernal pools/adobe (5-200 m)
<i>Orcuttia pilosa</i> hairy Orcutt grass	CE	FE	List 1B	BUT GLE MAD MER STA TEH	vernal pools (55-200 m)
<i>Orcuttia tenuis</i> slender Orcutt grass	CE	FT	List 1B	LAK LAS PLU SAC SHA SIS TEH	vernal pools (200-1,100 m)
<i>Silene campanulata</i> ssp. <i>campanulata</i> Red Mtn. catchfly	CE	FC	List 1B	COL MEN	chaparral, lower montane coniferous forest/serpentinite rocky (425-1,230 m)
<i>Tuctoria greenei</i> Greene's tuctoria	CR	FE	List 1B	BUT FRE MAD MER SHA SJQ STA THE TUL	vernal pools (<200 m)

Notes:¹ Nomenclature corresponds to Skinner and Pavlik 1994;² CE State Listed as endangered; CR State Listed as rare (Section 1904, DFG code, 1994);³ SC federal Species of Concern; FC federal candidate; FE Listed as endangered by federal government; FP federally proposed threatened; FT Listed as threatened by federal government (USFWS, December 1998); ⁴ Listed 1B plants rare, threatened, or endangered in California and elsewhere (California Native Plant Society).

January 4, 2000

The following information includes the most current literature and resource knowledge of known populations, ecological requirements, range and distribution, and potential or existing threats to high priority species.

Indian valley brodiaea (*Brodiaea coronaria* ssp. *rosea*) is listed as California Endangered and a Federal Species of Special Concern. This perennial herb in the Liliaceae family flowers from May to June. Its habitat includes closed-cone coniferous forest, chaparral, cismontane woodland, and valley and foothill grasslands with serpentinite soils at elevations ranging from 0 to 100 meters.

Range CNDDDB information indicates that 14 occurrences of this species have been reported in Colusa, Glenn, Lake, and Tehama counties (one of which is possibly extirpated). These sites are on Bureau of Land Management, U.S. Forest Service, private, and unknown ownership properties. Potential habitat exists at all the reservoir sites and known populations occur within 6 miles of Sites, within about 8 miles of Colusa cell, within about 10 miles of Red Bank, and within 2 miles of Newville.

Threats Various threats to these populations have been identified, including inundation by reservoir construction, mining, off-road recreational vehicle activity, road or trail construction, horticultural collecting, vandalism, and dumping. Populations are protected in part at a BLM Area of Critical Environmental Concern in Lake County.

Hoover's spurge (*Chamaesyce hooveri*) is listed as Federally Threatened with no State status. This annual herb in the Euphorbiaceae family flowers in July and August. Its habitat is vernal pools at elevations ranging from 25 to 250 meters.

Range According to CNDDDB records Hoover's spurge has been reported

January 4, 2000

from 30 occurrences in Butte, Glenn, Stanislaus, Merced, Tehama, and Tulare counties. These plants are on CDFG, The Nature Conservancy, USFWS, private, and unknown ownership properties. Potential habitat exists at Sites and Colusa cell and known populations occur within 7 miles of these reservoirs.

Threats Threats include agriculture, altered hydrology, competition from non-native plants, erosion or runoff, trampling, and grazing. Populations are protected in part at the CDFG Stone Corral Ecological Reserve, USFWS Sacramento National Wildlife Refuge, and TNC Vina Plains Preserve.

Palmate-bracted bird's beak (*Cordylanthus palmatus*) is listed as California Endangered and Federally Endangered. This annual herb in the Scrophulariaceae family flowers from May through October. Its habitat is chenopod scrub and alkaline areas in valley and foothill grassland at elevations ranging from 5 to 155 meters.

Range CNDDDB information indicates that 21 occurrences of this plant are known from Alameda, Colusa, Fresno, San Joaquin, and Yolo counties. This species is thought to be extirpated from Madera and Glenn counties. These populations occur on land owned by the City of Woodland, CDFG, City of Livermore, USFWS, and private entities. Known sites occur within 5 miles of Colusa cell and 7 miles of Sites reservoirs.

Threats Threats include agriculture, altered hydrology, competition from exotic plants, biocides, grazing, off road vehicle use, vandalism/dumping, and road and trail construction. Populations are protected at the CDFG Alkali Sink Ecological Reserve and Mendota Wildlife Area and at the Sacramento National Wildlife Refuge.

Bogg's Lake hedge-hyssop (*Gratiola heterosepala*) is listed as California Endangered with no Federal status. This annual herb in the Scrophulariaceae family flowers from

January 4, 2000

April to June. Its habitat includes shallow water in marshes, swamps (lake margins), and vernal pools at elevations ranging from 0 to 1,200 meters.

Range CNDDDB information indicates that 77 occurrences of this species (one of which is possibly extirpated) have been reported in Fresno, Lake, Lassen, Madera, Modoc, Placer, Sacramento, San Joaquin, Shasta, Solano, and Tehama counties. These sites are on land owned by the BLM, CDFG, TNC, Sacramento County, Solano County Farmlands and Open Space, The Trust for Wildland Communities, US Forest Service, private, and unknown entities. Potential habitat exists at all the reservoir sites. However, the closest known location is 12 miles northeast of the Newville Reservoir alternative.

Threats Threats include agriculture, altered flood regime, development, herbicide use, feral pigs, grazing, foot traffic, recreational use, road and trail construction, and landfill construction. Populations are protected in private preserves, BLM Research Areas, a USFWS Botanical Special Interest Area, and CDFG Ecological Reserves.

Milo Baker's lupine (*Lupinus milo-bakeri*) is listed as California Threatened and Federal Species of Special Concern. This annual herb in the Fabaceae family flowers from June through September. Its habitat includes cismontane woodland (often along roads) and foothill and valley grasslands at elevations from 395 to 430 meters.

Range According to CNDDDB records Milo Baker's lupine has been reported from 17 occurrences in Colusa and Mendocino counties. Four Mendocino County sites may have been extirpated. These sites are on land under Bureau of Indian Affairs, CALTRANS, and private ownership.

Threats This species is threatened by biocides, grazing, and road and trail construction.

January 4, 2000

Colusa grass (*Neostapfia Colusana*) is listed as California Endangered and Federally Threatened. This annual grass flowers from May to August. Its habitat is vernal pools, alkali playas, or adobe soils at elevations ranging from 5 to 200 meters.

Range According to CNDDDB records, this species is reported from 56 occurrences in Merced, Solano, Stanislaus, and Yolo counties. It has been extirpated from Colusa County and from some sites in Stanislaus, Merced, and Glenn counties. Colusa grass occurs on land owned by TNC, Solano County Farmlands and Open Space, Stanislaus County, the US Department of Defense, and private and unknown entities. Potential habitat occurs at Sites and Colusa cell reservoirs and known populations occur approximately 10 miles to the east.

Threats Various threats to these populations include agricultural practices and grazing, altered flood regime and surface water diversion, biocides, competition from exotics, inundation, foot traffic, off-road vehicle activity, and road construction. Some populations are protected by TNC and Solano County Farmlands and Open Space.

Hairy Orcutt grass (*Orcuttia pilosa*) is listed as California Endangered and Federally Endangered. This annual grass flowers from May to September. Its habitat is vernal pools ranging in elevation from 55 to 200 meters.

Range CNDDDB information indicates that 39 occurrences of this species have been reported in Butte, Glenn, Madera, Merced, Stanislaus, and Tehama counties (11 of these occurrences have been extirpated). These populations occur on land owned by the USBR, CALTRANS, TNC, USFWS, and private parties. Potential habitat exists at Sites and Colusa cell reservoirs and known populations occur within 9 miles.

January 4, 2000

Threats Threats include agriculture, competition from exotic plants, development, grazing, off-road vehicle use, and road and trail construction. Some populations are protected at Vina Plains Nature Conservancy Preserve and at the Sacramento National Wildlife Refuge.

Slender Orcutt grass (*Orcuttia tenuis*) is listed as California Endangered and Federally Threatened. This annual grass flowers from May to July. Its habitat is vernal pools ranging in elevation from 200 to 1,100 meters.

Range CNDDDB information indicates that 76 occurrences of this species have been found in Lake, Lassen, Plumas, Sacramento, Shasta, Siskiyou, and Tehama counties. Four of the sites in Shasta County have been extirpated. These plants occur on land under BLM, City of Redding, CDFG, USFS, TNC, Trust for Wildland Communities, and private and unknown ownership. Potential habitat occurs at all the reservoirs, but no known populations occur within 20 miles.

Threats Threats include altered hydrology and surface water, competition from exotics, development, trampling, grazing, landfills, logging, off-road vehicle activity, vandalism, and dumping. Populations are protected in part at TNC Vina Plains Preserve, CDFG's Dales Lake Ecological Reserve, BLM Alturas RA, and Redding RA.

Red Mountain catchfly (*Silene campanulata* ssp. *campanulata*) is listed as California Endangered and a federal candidate. This perennial herb in the Caryophyllaceae family flowers from May to June. Its habitat includes chaparral and lower montane coniferous forest with serpentinite or rocky soils at elevations ranging from 425 to 1,230 meters.

Range CNDDDB information indicates that seven occurrences of this plant have been found in Colusa and Mendocino counties. These populations occur on land under BLM and private ownership. A known population of this species grows

January 4, 2000

within 5 miles of Sites reservoir. However, the proposed reservoir maximum pool is well below the observed elevation range of the species.

Threats Threats include erosion or runoff and mining. One population may have been extirpated by logging activities.

Greene's tuctoria (*Tuctoria greenei*) is listed as California Rare and Federally Endangered. This annual grass flowers from May to July. Its habitat is vernal pools at elevations less than 200 meters.

Range CNDDDB information indicates that 38 occurrences of this species have been found. Nineteen of those populations occur in Butte, Merced, Shasta, and Tehama counties. Other occurrences are thought to be extirpated from Fresno, Madera, Stanislaus, Tulare, and San Joaquin counties. These plants occur on private land, TNC, and unknown ownership properties. Potential habitat occurs at all of the north of the Delta offstream storage reservoir alternatives. However, the nearest known population is more than 20 miles from any of the reservoir sites.

Threats Threats include agriculture, altered hydrology and surface water diversions, and competition from exotic plants, grazing, and exotics. Populations are protected in part at TNC Vina Plains Preserve.

January 4, 2000

Table 1.2.2. Probability Estimates for Occurrence of High Priority Plant Species in the Four Offstream Storage Reservoirs (Probabilities are based on existing habitat and known occurrences).

Species Common Name ¹	Probability for occurrence ²			
	Sites	Colusa cell	Newville	Red Bank
<i>Brodiaea coronaria</i> ssp. <i>rosea</i> Indian Valley brodiaea	low	low	low	low
<i>Chamaesyce hooveri</i> Hoover's spurge	low	low	low	none
<i>Cordylanthus palmatus</i> palmate-bracted bird's-beak	low	low	low	none
<i>Gratiola heterosepala</i> Bogg's Lake hedge-hyssop	med	med	med	med
<i>Lupinus milo-bakeri</i> Milo Baker's lupine	low	low	low	low
<i>Neostaphia Colusana</i> Colusa grass	low	low	low	none
<i>Orcuttia pilosa</i> hairy Orcutt grass	low	low	low	none
<i>Orcuttia tenuis</i> slender Orcutt grass	low	low	low	none
<i>Silene campanulata</i> ssp. <i>campanulata</i> Red Mtn. catchfly	none	none	low	low
<i>Tuctoria greenei</i> Greene's tuctoria	low	low	low	none

Notes: ¹ Nomenclature corresponds to Skinner and Pavlik 1994. ² Probability based on closest known occurrence records and potential habitat within the reservoirs in 1998-99.

1.2.2. Priority and Low Priority Species

The literature and regional references identified 42 priority and 30 low priority species within 30 miles of the proposed reservoirs (Table 1.2.3; Table 1.2.4).

January 4, 2000

Table 1.2.3. Priority Plant Species with Potential to Occur in the Vicinity of the Offstream Storage Reservoir Projects, Tehama, Glenn and Colusa Counties, California.

Species Common Name ¹	State Status	USFWS listing ²	CNPS status ³	Distribution by County	Habitat type
<i>Antirrhinum subcordatum</i> dimorphic snapdragon	none	none	List 1B	COL GLE LAK THE	chaparral/sometimes serpentinite (85-800m)
<i>Astragalus rattanii</i> var. <i>jepsonianus</i> Jepson's milk-vetch	none	none	List 1B	COL GLE LAK NAP TEH YOL	woodland, grassland/often serpentiinte (320-700m)
<i>Astragalus tener</i> var. <i>ferrisiae</i> Ferris's milk-vetch	none	SC	List 1B	BUT COL GLE SOL SUT YOL	meadows, grassland, subalkaline flats (5-75m)
<i>Atriplex cordulata</i> heartscale	none	SC	List 1B	ALA BUT CCA FRE GLE KNG KRN MAD MER SJQ SOL STA TUL YOL	meadows, grassland, saline/alkaline (1-275m)
<i>Atriplex depressa</i> brittlescale	none	none	List 1B	ALA BUT CCA COL FRE GLE KRN MAD MER SOL STA TUL YOL	Chenopod scrub, meadows, playas, grassland, vernal pools/alkaline, clay (1-320m)
<i>Atriplex joaquiniana</i> San Joaquin spearscale	none	SC	List 1B	ALA CCA COL GLE MER NAP SAC SBT SCL SJQ SOL TUL YOL	Chenopod scrub, meadows, playas, grassland, vernal pools/alkaline (1-320m)
<i>Atriplex persistens</i> vernal pool saltbush	none	none	List 1B	GLE MER STA TUL	vernal pools/alkaline (10-115m)
<i>Balsamorhiza macrolepis</i> ssp. <i>macrolepis</i> big-scale balsamroot	none	none	List 1B	ALA BUT MPA NAP PLA SCL TEH	woodland, grassland/sometimes serpentinite (< 1,400m)
<i>Chlorogalum pomeridianum</i> var. <i>minus</i> dwarf soaproot	none	none	List 1B	COL LAK SLO SON THE	chaparral/serpentinite (305-750m)
<i>Cryptantha crinita</i> silky cryptantha	none	SC	List 1B	SHA THE	woodland, riparian, grasslands/gravelly streambeds (150-300m) (continued)

January 4, 2000

Species (Table 1.2.3. page 2 of 4)
Common Name¹

**State
Status**

**USFWS
listing²**

**CNPS
status³**

Distribution by County

Habitat type

<i>Delphinium recurvatum</i> recurved larkspur	none	SC	List 1B	ALA CCA COL FRE KNG KRN MER SLO SOL TUL	chenopod scrub, woodland, grassland, vernal pools/alkaline (3-750m)
<i>Downingia pusilla</i> dwarf downingia	none	none	List 1B	MER MPA NAP PLA SAC SOL SON STA TEH SA	mesic grassland, vernal pools (± 150m)
<i>Eleocharis quadrangulata</i> four-angled spikerush	none	none	List 2	BUT MER THE	freshwater marsh (<500m)
<i>Eriastrum brandegeae</i> Brandegee's eriastrum	none	SC	List 1B	COL GLE LAK SCL TEH TRI	chaparral, woodland/volcanic (315-1,030m)
<i>Eriogonum luteolum</i> var. <i>caninum</i> Tiburon buckwheat	none	none	List 3	ALA CCA COL LAK MRN NAP SCL SMT	chaparral, grassland, serpentinite (< 500m)
<i>Eriogonum nervulosum</i> Snow Mtn. Buckwheat	none	SC	List 1B	COL GLE LAK NAP SON YOL	chaparral, serpentinite (300-2,105m)
<i>Eschscholzia rhombipetala</i> diamond-petaled California poppy	none	SC	List 1A	ALA CCA COL SLO STA	grassland/alkaline (0-975m)
<i>Fritillaria pluriflora</i> adobe lily	none	SC	List 1B	BUT COL GLE LAK NAP PLU SOL TEH YOL	chaparral, woodland, grassland/often adobe (60-705m)
<i>Hesperevax acaulis</i> var. <i>acaulis</i> dwarf evax	none	none	List 1B	AMA BUT COL ELD FRE MAD MNT SAC SCL SLO STA TEH TUL	woodland, grassland, vernal pools (30-1,000m)
<i>Hesperolinon drymarioides</i> drymaria-like western flax	none	SC	List 1B	COL GLE LAK NAP YOL	chaparral, woodland, grassland/often serpentinite (100-1,130m)
<i>Hesperolinon tehamense</i> Tehama Co. western flax	none	SC	List 1B	GLE THE	chaparral, woodland/often serpentinite (100-1,000m) (continued)

January 4, 2000

Species (Table 1.2.3. page 3 of 4) Common Name ¹	State Status	USFWS listing ²	CNPS status ³	Distribution by County	Habitat type
<i>Hibiscus lasiocarpus</i> California hibiscus	none	none	List 2	COL GLE THE	freshwater marsh ((0-120m)
<i>Juglans californica</i> var. <i>hindsii</i> Northern California black walnut	none	SC	List 1B	CCA NAP SAC SOL YOL	riparian forest and woodland (50-200 m)
<i>Juncus leiostermus</i> var. <i>leiostermus</i> Red Bluff dwarf rush	none	none	List 1B	BUT SHA THE	chaparral, woodland, grassland, vernal pools (35-1,020m)
<i>Layia septentrionalis</i> Colusayia	none	none	List 1B	COL GLE LAK MEN NPA SON SUT TEH YOL	chaparral, woodland grassland/sandy, serpentinite (100-1,095m)
<i>Legenere limosa</i> Legenere	none	SC	List 1B	LAK NAP PLA SAC SMT SOL SON STA TEH	vernal pools (<150)
<i>Lepidium latipes</i> var. <i>heckardii</i> Heckard's pepper-grass	none	none	List 1B	GLE SOL YOL	grassland/alkaline falts (10-200m)
<i>Limnanthes floccosa</i> ssp. <i>floccosa</i> woolly meadowfoam	none	none	List 2	BUT LAK SHA SIS THE TRI OR	vernally mesic woodland, grassland (<400m)
<i>Lotus rubriflorus</i> Red-flowered lotus	none	SC	List 1B	COL STA THE	woodland, grassland (+/-200m)
<i>Lupinus sericatus</i> Cobb Mtn. Lupine	none	none	List 1B	COL LAK NAP SON	chaparral, woodland (500-1,500m)
<i>Madia hallii</i> Hall's madia	none	SC	List 1B	COL LAK NAP YOL	chaparral/serpentinite (50-670m)
<i>Madia stebbinsii</i> Stebbin's madia	none	none	List 1B	SHA TEH TRI	chaparral./serpentinite (400-1,580m) (continued)

January 4, 2000

Species (<i>Table 1.2.3. page 4 of 4</i>) Common Name ¹	State Status	USFWS listing ²	CNPS status ³	Distribution by County	Habitat type
<i>Microseris sylvatica</i> woodland microseris	none	none	List 3	BUT GLE LAX SBT	chaparral, woodland, grassland (60-1,500m)
<i>Myosurus minimus</i> ssp. <i>apus</i> little mousetail	none	SC	List 3	BUT COL KRN SOL STA OR	vernal pools/alkaline (>1,500m)
<i>Myosurus sessilis</i> sessile mousetail	none	none	List 3	CCA COL FRE GLE MER SBT DJQ SOL STA YOL OR	grassland, vernal pools (<150m)
<i>Navarretia leucocephala</i> ssp. <i>bakeri</i> Baker's navarretia	none	none	List 1B	COL LAK MEN MRN NAP SOL SON TEH	woodland, meadows (mesic), grassland, vernal pools (<1,700m)
<i>Paronychia ahartii</i> Ahart's paronychia	none	SC	List 1B	BUT SHA THE	woodland, grassland, vernal pools (<500m)
<i>Sagittaria sanfordii</i> Sandford's arrowhead	none	SC	List 1B	BUT DNT FRE KRN MER MRN ORA SAC SHA SJQ TEH VEN	marsh & swamp (assorted shallow freshwater) (<300m)
<i>Sanicula tracyi</i> Tracy's sanicle	none	SC	List 1B	BUT DNT HUM TEH TRI	woodland (100-1,000m)
<i>Trichocoronis wrightii</i> var. <i>wrightii</i> Wright's trichocoronis	none	none	List 2	COL MER RIV SJQ SUT TX	meadows, freshwater marsh, riparian, vernal pools/alkaline
<i>Tropidocarpum capparideum</i> caper-fruited tropidocarpum	none	SC	List 1A	ALA CCA GLE MNT SCL SJQ	grassland/alkaline hills (1-455m)
<i>Viburnum ellipticum</i> Western viburnum	none	none	List 3	CCA FRE ELD GLE HUM MEN NAP SHA SON	chaparral, woodland (300-1,400m)

Notes: 1. Nomenclature corresponds to Skinner and Pavlik 1994. 2. SC-federal Species of Concern 3. California Native Plant Society; List 1A-plants presumed to be extinct in California List 1B-plants rare, Threatened, or endangered in California and elsewhere; List 2-plants rare, threatened, or endangered in California but more common elsewhere; List 3-plants about which more information is needed.

January 4, 2000

Table 1.2.4. Low Priority Plant Species with Potential to Occur in the Vicinity of the Offstream Storage Reservoir Project, Tehama, Glenn and Colusa Counties, California (all are CNPS "Limited distribution" List 4).

<u>Scientific Name</u>	<u>Common Name</u>
<i>Allium fimbriatum</i> var. <i>purdyi</i>	Purdy's onion
<i>Allium sanbornii</i> var. <i>sanbornii</i>	Sanborn's onion
<i>Androsace elongata</i> ssp. <i>acuta</i>	rock jasmine
<i>Antirrhinum cornutum</i>	spurred snapdragon
<i>Asclepias solanoana</i>	serpentine milkweed
<i>Astragalus breweri</i>	Brewer's milk-vetch
<i>Astragalus clevelandii</i>	Cleveland's milk-vetch
<i>Astragalus pauperculus</i>	depauperate milk-vetch
<i>Astragalus rattanii</i> var. <i>rattanii</i>	Rattan's milk-vetch
<i>Ceanothus jepsonii</i> var. <i>albiflorus</i>	musk brush
<i>Chamaesyce ocellata</i> ssp. <i>rattanii</i>	Stony Creek spurge
<i>Collinsia sparsiflora</i> var. <i>arvensis</i>	few-flowered collinsia
<i>Collomia diversifolia</i>	serpentine collomia
<i>Cryptantha excavata</i>	deep-scarred cryptantha
<i>Eriogonum luteolum</i> var. <i>caninum</i>	Tiburon buckwheat
<i>Eriogonum tripodum</i>	tripod eriogonum
<i>Erodium macrophyllum</i>	large-leaved filaree
<i>Helianthus exilis</i>	serpentine sunflower
<i>Hesperis matronalis</i>	hogwallow evax
<i>Juncus articulatus</i>	jointed rush
<i>Linanthus latisectus</i>	linanthus
<i>Lomatium ciliolatum</i> var. <i>hooveri</i>	ciliate biscuitroot
<i>Mimulus glaucescens</i>	shield-bracted monkeyflower
<i>Navarretia eriocephala</i>	hoary navarretia
<i>Navarretia heterandra</i>	Tehama navarretia
<i>Navarretia jepsonii</i>	Jepson's navarretia
<i>Navarretia subuligera</i>	awl-leaved navarretia
<i>Orobancha valida</i> ssp. <i>howellii</i>	Howell's broom-rape
<i>Polygonum bidwelliae</i>	Bidwell's knotweed
<i>Streptanthus drepanoides</i>	sickle-fruited jewel-flower

Nomenclature corresponds to Skinner and Pavlik 1994.

Field personnel examined preserved specimens of prioritized species at the California Academy of Sciences, University of California Berkeley, U.C. Davis, and California State University Chico herbaria. The Jepson Manual (Hickman 1993) and A California Flora and Supplement (Munz and Keck 1973) were checked for species

January 4, 2000

habitat descriptions and flowering periods. Regional botanists were consulted about local occurrences of sensitive species. For species with known soil associations, United States Department of Agriculture Natural Resource Conservation Service data were used to generate maps of Lodo shale and clay soils to assist in narrowing the focus of the surveys (Table 1.2.5.; Attachment I.a-d.) (Harradine 1948; USDA 1965).

Table 1.2.5. Acreage estimates of Lodo shale and clay soil which are associated with several prioritized plant species in the Offstream Storage Reservoirs.

Soils	Number Of Acres Of Mapped Soil Units			
	Sites	Colusa Cell	Newville	Red Bank
Lodo Shales	0	0	7,182	3,101
Clay	8,916	4,950	2,074	305

1.3. Field Survey Methods

Within the reservoir inundation elevations, field surveys were conducted for prioritized species according to established guidelines and protocols (CDFG 1984; USFWS 1996; Nelson 1985, 1987). Under these guidelines, focused habitat-specific surveys were conducted, using wandering transect methodology, between February and October 1998 and 1999. These months coincided with the appropriate phenological stages (flowering and fruiting) necessary for the identification of most plant species occurring in the area, including all prioritized species (Table 1.2.1 through 1.2.4). Transects were spaced 5 to 10 meters apart except in microhabitats, such as riparian areas, where they were 1 meter apart. Dense valley stands of star thistle (*Centaurea solstitialis*), ridge tops, vertical shale slopes, and impenetrable chaparral and woodland stands were perimeter surveyed only due to the lack of potential habitat. Where access and topography allowed, potential habitat was surveyed completely. Relatively minor areas at each reservoir could not be surveyed due to lack of authorized private property access.

January 4, 2000

Field survey coverage areas were estimated for each reservoir based on the level of coverage accomplished. Survey coverage was divided into three effort classes: 0 percent, less than 50 percent, and 50-100 percent coverage. Land that was not surveyed (0 percent) included: areas that do not support suitable habitat for the prioritized species, unauthorized access properties, private residences and yards, cemeteries, bedrock stream channels, vertical slopes, ridge tops above reservoir elevation, 100 percent vegetated chaparral or scrub areas, and large solid stands of yellow star thistle (*Centaurea solstitialis*). Areas which were surveyed less than 50 percent included two types of effort. These areas were surveyed during less than half of the phenological time period for the prioritized species, or half of the area was actually surveyed. These areas consisted of marginal habitat, land lacking sensitive species habitat, or land in a degraded condition which would not warrant further surveys. In areas which were surveyed greater than 50 percent and up to 100 percent, both phenological and transect surveys were done.

Areas with high quality potential habitat were prioritized and surveyed throughout the phenological time period with more complete transect coverage. Habitat parameters, including mapped soils, aspect, and plant associates, defined the number of return visits and the level of coverage. One hundred percent coverage was accomplished only in potential habitat known to support the prioritized plant species.

Plant species were identified and recorded in the field whenever possible, or preserved in a voucher collection for identification at a later date. The voucher collection consists of plant specimens which were collected and preserved as proof for species on the plant inventory lists. A plant voucher database was prepared for collections. Previously undocumented populations of prioritized species were recorded in a DWR botanical inventory database. Data were collected about each sensitive plant population including habitat parameters, approximate number of individuals, phenological state, full location description, plant community associates, existing site conditions, and present or possible threats to the population. Population definitions in